

=> file reg

FILE 'REGISTRY' ENTERED AT 10:30:49 ON 02 OCT 2003
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=> display history full ll-

L1 FILE 'REGISTRY' ENTERED AT 09:42:54 ON 02 OCT 2003
234 SEA (B(L)N)/ELS (L) 2/ELC.SUB
E ALUMINUM/CN
L2 1 SEA ALUMINUM/CN
E SILICON/CN
L3 1 SEA SILICON/CN
L4 1 SEA TITANIUM/CN

L5 FILE 'HCA' ENTERED AT 09:48:57 ON 02 OCT 2003
5470 SEA CBN OR C(A) (BN OR BORON##(A)NITRIDE#) OR (CUBIC? AND
((BORON## OR B) (A)NITRIDE# OR L1))

L6 FILE 'REGISTRY' ENTERED AT 09:49:43 ON 02 OCT 2003
E OXYGEN/CN
1 SEA OXYGEN/CN

L7 FILE 'HCA' ENTERED AT 09:52:10 ON 02 OCT 2003
1637 SEA L6 AND GETTER? OR ((OXYGEN# OR O2 OR O) (3A)GETTER?)
L8 394185 SEA L2 OR (ALUMINUM# OR AL) (2A) (METAL#### OR ELEMENTAL?
OR FILM? OR LAYER? OR COAT?)
L9 423955 SEA L3 OR (SILICON OR SI) (2A) (METAL#### OR ELEMENTAL? OR
FILM? OR LAYER? OR COAT?)
L10 178725 SEA L4 OR (TITANIUM# OR TI) (2A) (METAL#### OR ELEMENTAL?
OR FILM? OR LAYER? OR COAT?)

L11 FILE 'REGISTRY' ENTERED AT 09:55:32 ON 02 OCT 2003
6727 S (M(L)C)/ELS (L) 2/ELC.SUB
L12 1702 SEA L11 AND ?CARBID?/CNS
L13 2448 SEA (M(L)N)/ELS (L) 2/ELC.SUB
L14 1617 SEA L13 AND ?NITRID?/CNS

L15 FILE 'HCA' ENTERED AT 10:10:37 ON 02 OCT 2003
51629 SEA L12 OR METAL####(W) CARBIDE#
L16 78447 SEA L14 OR METAL####(W)NITRIDE#
L17 8827 SEA GETTER?
L18 3 SEA L5 AND L7
L19 349 SEA L5 AND L8
L20 620 SEA L5 AND L9
L21 378 SEA L5 AND L10
L22 3 SEA L19 AND L17
L23 2 SEA L20 AND L17
L24 4 SEA L21 AND L17

L25 528 SEA L5 AND L15
L26 745 SEA L5 AND L16
L27 0 SEA L25 AND L17
L28 2 SEA L26 AND L17
L29 5 SEA L18 OR L22 OR L23 OR L24 OR L28

FILE 'WPIX, JAPIO' ENTERED AT 10:21:59 ON 02 OCT 2003
L30 2809 SEA CBN OR C(A) (BN OR BORON##(A)NITRIDE#) OR (CUBIC? AND
((BORON## OR B) (A)NITRIDE# OR L1))
L31 1754 SEA CBN OR C(A) (BN OR BORON##(A)NITRIDE#) OR (CUBIC? AND
((BORON## OR B) (A)NITRIDE# OR L1))

TOTAL FOR ALL FILES
L32 4563 SEA L5
L33 4188 SEA GETTER?
L34 2928 SEA GETTER?
TOTAL FOR ALL FILES
L35 7116 SEA GETTER?
L36 1 SEA L30 AND L33
L37 0 SEA L31 AND L34
TOTAL FOR ALL FILES
L38 1 SEA L32 AND L35

FILE 'HCA' ENTERED AT 10:27:43 ON 02 OCT 2003
L39 2389 SEA (L6 OR OXYGEN# OR O2 OR O) (2A)TRAP?
L40 1 SEA L5 AND L39
L41 0 SEA L40 NOT L29

FILE 'WPIX, JAPIO' ENTERED AT 10:28:24 ON 02 OCT 2003
L42 212 SEA (L6 OR OXYGEN# OR O2 OR O) (2A)TRAP?
L43 90 SEA (L6 OR OXYGEN# OR O2 OR O) (2A)TRAP?
TOTAL FOR ALL FILES
L44 302 SEA L39
L45 0 SEA L42 AND L30
L46 0 SEA L43 AND L31
TOTAL FOR ALL FILES
L47 0 SEA L44 AND L32

FILE 'REGISTRY' ENTERED AT 10:30:49 ON 02 OCT 2003

=> file wpix

FILE 'WPIX' ENTERED AT 10:31:04 ON 02 OCT 2003
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FILE LAST UPDATED: 1 OCT 2003 <20031001/UP>
MOST RECENT DERWENT UPDATE: 200363 <200363/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

=> d l36 1 max

L36 ANSWER 1 OF 1 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN
 AN 1978-08257A [04] WPIX
 TI **Cubic boron nitride** particles - coated
 with nickel, then with e.g. titanium, aluminium or copper.
 DC E36 L02
 IN PENNY, A L
 PA (DBEE) DE BEERS IND DIAMOND DIV PTY LTD
 CYC 1
 PI ZA 7606480 A 19771101 (197804)*
 PRAI ZA 1976-6480 19761028
 IC C01B000-00
 AB ZA 7606480 A UPAB: 19930901
 A metal coated **cubic boron nitride**
 particle contains ≥ 2 layers of metals. The inner layer pref. is a
 good oxygen **getter** such as titanium, aluminium or copper
 and the outer layer pref. nickel.
 FS CPI
 FA AB
 MC CPI: E31-Q; L02-F03; L02-J01A
 CMC UPB 19930924
 M3 *01* C800 C107 C803 C806 C802 C807 C804 B720 B803 B831 B105 B730
 N000 Q334 Q451 Q454 M740 M750 M411 M902

=> file hca

FILE 'HCA' ENTERED AT 10:31:45 ON 02 OCT 2003
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 COPYRIGHT (C) 2003 AMERICAN CHEMICAL SOCIETY (ACS)

=> d 129 1-5 ibib abs hitstr hitind

L29 ANSWER 1 OF 5 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 138:372891 HCA
 TITLE: Preparation of high toughness low oxygen
cubic boron nitride
 ceramics by high temperature and pressure
 process using oxygen-trapping additives
 Zimmermann, Michael H.; Einset, Erik O.
 INVENTOR(S): General Electric Company, USA
 PATENT ASSIGNEE(S):
 SOURCE: PCT Int. Appl., 14 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003040062	A2	20030515	WO 2002-US34323	20021023
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,				

CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
 NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
 TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ,
 BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,
 BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU,
 MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
 GW, ML, MR, NE, SN, TD, TG

US 2003099587 A1 20030529 US 2001-1573 20011102
 US 2001-1573 A 20011102

PRIORITY APPLN. INFO.:

AB A method for improving the toughness of a **CBN** product made by a high temp./high pressure (HP/HT) process begins by forming a blend of an **oxygen-getter** (such as Al, Si or Ti, or carbides or nitrides of these metals) and **CBN** product-forming feedstock. The blend is subjected to a high temp./high pressure (HP/HT) process for forming a **CBN** product. The amt. of **oxygen-getter** in the blend is sufficient to improve the toughness of the **CBN** product. The resulting **CBN** product desirably has an oxygen content of .ltorsim.300 ppm. The HP/HT process is conducted with or without catalytic materials (such as LiH, Li3N, LiNH2 or LiOH).

IT 7782-44-7, Oxygen, processes
 (content in **cBN**; prepn. of high toughness low oxygen
cubic boron nitride ceramics by high
 temp. and pressure process using oxygen-trapping additives)
 RN 7782-44-7 HCA
 CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O==O

IT 10043-11-5P, Boron nitride, preparation
 (cubic-phase; prepn. of high toughness low oxygen
cubic boron nitride ceramics by high
 temp. and pressure process using oxygen-trapping additives)
 RN 10043-11-5 HCA
 CN Boron nitride (BN) (8CI, 9CI) (CA INDEX NAME)

B==N

IT 7429-90-5, Aluminum, processes 7440-21-3, Silicon,
 processes 7440-32-6, Titanium, processes
 (oxygen-getters; prepn. of high toughness low
 oxygen **cubic boron nitride** ceramics
 by high temp. and pressure process using oxygen-trapping
 additives)
 RN 7429-90-5 HCA
 CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

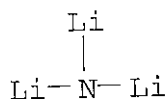
RN 7440-21-3 HCA
 CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 7440-32-6 HCA
 CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IT 26134-62-3, Lithium nitride (Li₃N)
 (prepn. of high toughness low oxygen **cubic boron nitride** ceramics by high temp. and pressure process using oxygen-trapping additives)
 RN 26134-62-3 HCA
 CN Lithium nitride (Li₃N) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C04B035-83
 CC 57-2 (Ceramics)
 ST oxygen trapping **cubic boron nitride**
 prodn toughness catalyst
 IT Carbides
 (metal, **oxygen-getters**; prepn. of high toughness low oxygen **cubic boron nitride** ceramics by high temp. and pressure process using oxygen-trapping additives)
 IT Nitrides
 (**oxygen-getters**; prepn. of high toughness low oxygen **cubic boron nitride** ceramics by high temp. and pressure process using oxygen-trapping additives)
 IT Fracture toughness
 Heat treatment
 (prepn. of high toughness low oxygen **cubic boron nitride** ceramics by high temp. and pressure process using oxygen-trapping additives)
 IT 7782-44-7, Oxygen, processes
 (content in **cBN**; prepn. of high toughness low oxygen **cubic boron nitride** ceramics by high temp. and pressure process using oxygen-trapping additives)
 IT 10043-11-5P, **Boron nitride**, preparation
 (**cubic-phase**; prepn. of high toughness low oxygen

cubic boron nitride ceramics by high temp. and pressure process using oxygen-trapping additives)

IT 7429-90-5, Aluminum, processes 7440-21-3, Silicon, processes 7440-32-6, Titanium, processes (oxygen-getters; prepn. of high toughness low oxygen cubic boron nitride ceramics by high temp. and pressure process using oxygen-trapping additives)

IT 1310-65-2, Lithium hydroxide (LiOH) 7580-67-8, Lithium hydride (LiH) 7782-89-0, Lithium amide (LiNH₂) 26134-62-3, Lithium nitride (Li₃N) (prepn. of high toughness low oxygen cubic boron nitride ceramics by high temp. and pressure process using oxygen-trapping additives)

L29 ANSWER 2 OF 5 HCA COPYRIGHT 2003 ACS on STN
 134:269766 HCA
 ACCESSION NUMBER:
 TITLE: Metal-coated abrasive particles and oxygen-scavenger metal for sintered metal-bonded abrasive tools
 INVENTOR(S): Palgren, Gary M.
 PATENT ASSIGNEE(S): 3m Innovative Properties Co., USA
 SOURCE: PCT Int. Appl., 42 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001023630	A1	20010405	WO 2000-US8787	20000403
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, FR, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6416560	B1	20020709	US 1999-405466	19990924
EP 1218556	A1	20020703	EP 2000-920050	20000403
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL			
JP 2003510193	T2	20030318	JP 2001-527010	20000403
PRIORITY APPLN. INFO.:			US 1999-405466	A 19990924
			WO 2000-US8787	W 20000403

AB The metal-coated abrasive particles are dispersed in a fused metal matrix contg. the binder and an O₂-scavenging metal powder. The abrasive particles are preferably based on diamond and/or

cubic-BN grit, and are used for manuf. of metal-bonded abrasive wheels or cutting tools having increased resistance to wear. The bonding metal or alloy is typically Co, W, Cu, Fe, Ni, Sn, Cr, and/or bronze. The O2-scavenging metal powder is typically selected from Al, Ca, Mg, Ti, Si, and/or Zr, esp. as a **getter** at 0.1-10% in a binder mixt. for use with **Ti-coated** grit to decrease oxidn. loss in hot-press bonding or sintering at 700-1000.degree.. The typical preform for pressure-sintered abrasives contains: (a) Cu foil 0.254 mm thick as the base; (b) metal-powder tape contg. mainly Cu, Fe, and WC powders with temporary resin binder and Al powder as the **getter**; and (c) top layer of diamond powder precoated with **Ti film** .apprx.1 .mu.m thick as the binder. The 3-layer preforms are suitable for lamination to manuf. grinding wheels or cutting tools sintered in air with controlled heating at 420-1007.degree. and the pressure of 100-400 kg/cm2.

IT 7440-32-6, **Titanium**, uses
 (coating, abrasive grit with; metal-coated abrasive
 powders in fused binder matrix contg. O2-scavenger metal for
 grinding wheels or cutting tools)
 RN 7440-32-6 HCA
 CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IT 10043-11-5, **Boron nitride**, uses
 (cubic, sintered tools with; metal-coated abrasive
 powders in fused binder matrix contg. O2-scavenger metal for
 grinding wheels or cutting tools)
 RN 10043-11-5 HCA
 CN Boron nitride (BN) (8CI, 9CI) (CA INDEX NAME)

B≡N

IT 7429-90-5, **Aluminum**, uses 7440-21-3, **Silicon**, uses
 (oxygen-getter; metal-coated abrasive powders
 in fused binder matrix contg. O2-scavenger metal for grinding
 wheels or cutting tools)
 RN 7429-90-5 HCA
 CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-21-3 HCA
 CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IC ICM C22C026-00
ICS C09K003-14; B24D003-10

CC 56-4 (Nonferrous Metals and Alloys)
Section cross-reference(s): 57

ST abrasive grit metal bonded tool sintering; diamond grit metal binder
abrasive wheel sintering; **titanium coated**
diamond powder sintering alloy binder

IT **Getters**
(O2 scavengers; metal-coated abrasive powders in fused
binder matrix contg. O2-scavenger metal for grinding wheels or
cutting tools)

IT **7440-32-6, Titanium**, uses 7440-47-3, Chromium,
uses 7440-67-7, Zirconium, uses
(coating, abrasive grit with; metal-coated abrasive
powders in fused binder matrix contg. O2-scavenger metal for
grinding wheels or cutting tools)

IT **10043-11-5, Boron nitride**, uses
(cubic, sintered tools with; metal-coated abrasive
powders in fused binder matrix contg. O2-scavenger metal for
grinding wheels or cutting tools)

IT **7429-90-5, Aluminum**, uses 7439-95-4, Magnesium, uses
7439-96-5, Manganese, uses **7440-21-3, Silicon**, uses
7440-70-2, Calcium, uses
(**oxygen-getter**; metal-coated abrasive powders
in fused binder matrix contg. O2-scavenger metal for grinding
wheels or cutting tools)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L29 ANSWER 3 OF 5 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 127:310293 HCA
TITLE: Cutting tips coated with hard film layers
including **cubic boron**

nitride for wear resistance in
rough-stage cutting

INVENTOR(S): Inspektor, Aharon
PATENT ASSIGNEE(S): Kennametal Inc., USA
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9738151	A1	19971016	WO 1997-US838	19970115
W: AU, BR, CA, CN, JP, KR, MX, RU, SG				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5976716	A	19991102	US 1996-627464	19960404

CA 2248692	AA	19971016	CA 1997-2248692	19970115
AU 9717042	A1	19971029	AU 1997-17042	19970115
AU 706148	B2	19990610		
EP 900287	A1	19990310	EP 1997-903006	19970115
EP 900287	B1	20020904		
R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
CN 1215437	A	19990428	CN 1997-193587	19970115
BR 9708499	A	19990803	BR 1997-8499	19970115
JP 2000508377	T2	20000704	JP 1997-536167	19970115
AT 223517	E	20020915	AT 1997-903006	19970115
ZA 9701602	A	19970829	ZA 1997-1602	19970225
MX 9807847	A	20000531	MX 1998-7847	19980925
KR 2000005021	A	20000125	KR 1998-707641	19980926
US 6054185	A	20000425	US 1998-208567	19981209
PRIORITY APPLN. INFO.:			US 1996-627464	A 19960404
			WO 1997-US838	W 19970115

AB The cutting tips typically manufd. from sintered carbide alloys are coated with: (a) adhesion-promoting film, esp. of a **getter** -type metal; (b) sequential hard interlayer films of B-C, B-C-N, B-N, and then B-C-N; and (c) the top film of **cubic** BN for wear resistance. The adhesion layer is selected from Ti, Zr, Hf, Mg, and/or Al as reactive **metals**. The resulting multilayer coating is typically 1-5 .mu.m thick, and is suitable for the sintered WC-Co alloy tips that can be used for rough-stage cutting as a substitute for conventional surface grinding of metals and alloys.

IT 10043-11-5, **Boron nitride** (BN), uses
(**cubic**, hard film, coating with; cutting tips coated
with hard interlayers and **cubic boron
nitride** top film for wear resistance in rough-stage
cutting)

RN 10043-11-5 HCA
CN Boron nitride (BN) (8CI, 9CI) (CA INDEX NAME)

B≡N

IT 7429-90-5, **Aluminum**, uses 7440-32-6,
Titanium, uses
(**film**, **coating** interlayers with; cutting tips
coated with hard interlayers and **cubic boron
nitride** top film for wear resistance in rough-stage
cutting)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-32-6 HCA
CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IT 10043-11-5D, Boron nitride,
nonstoichiometric
(interlayer, hard coating with; cutting tips coated with hard
interlayers and **cubic boron nitride**
top film for wear resistance in rough-stage cutting)

RN 10043-11-5 HCA

CN Boron nitride (BN) (8CI, 9CI) (CA INDEX NAME)

B=N

IC ICM C23C028-04
ICS C23C028-00; C23C014-06; C23C016-34; B23B027-14

CC 56-4 (Nonferrous Metals and Alloys)
Section cross-reference(s): 57

ST sintered cutting tool multilayer hard coating; **boron
nitride** top coating cutting tool; carbide alloy tool
multilayer hard coating

IT Coating materials
(abrasion-resistant, multilayer; cutting tips coated with hard
interlayers and **cubic boron nitride**
top film for wear resistance in rough-stage cutting)

IT Cutting tools
(hard coating on; cutting tips coated with hard interlayers and
cubic boron nitride top film for wear
resistance in rough-stage cutting)

IT 10043-11-5, Boron nitride (BN), uses
(**cubic**, hard film, coating with; cutting tips coated
with hard interlayers and **cubic boron
nitride** top film for wear resistance in rough-stage
cutting)

IT 11136-82-6 65155-35-3
(cutting tools, coating on; cutting tips coated with hard
interlayers and **cubic boron nitride**
top film for wear resistance in rough-stage cutting)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium,
uses 7440-32-6, Titanium, uses 7440-58-6,
Hafnium, uses 7440-67-7, Zirconium, uses
(film, coating interlayers with; cutting tips
coated with hard interlayers and **cubic boron
nitride** top film for wear resistance in rough-stage
cutting)

IT 10043-11-5D, Boron nitride,
nonstoichiometric 12656-55-2D, Boron carbide nitride,
nonstoichiometric 60063-34-5D, Boron carbide, nonstoichiometric
(interlayer, hard coating with; cutting tips coated with hard
interlayers and **cubic boron nitride**
top film for wear resistance in rough-stage cutting)

L29 ANSWER 4 OF 5 HCA COPYRIGHT 2003 ACS on STN
 125:121161 HCA
 ACCESSION NUMBER: Tool inserts precoated for brazing to holders in
 TITLE: air without using a vacuum furnace
 Iacovangelo, Charles D.
 INVENTOR(S): General Electric Company, USA
 PATENT ASSIGNEE(S): Eur. Pat. Appl., 6 pp.
 SOURCE: CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 716159	A1	19960612	EP 1995-308626	19951130
R: AT, BE, DE, ES, FR, GB, IT				
US 5626909	A	19970506	US 1994-350572	19941207
JP 08268799	A2	19961015	JP 1995-315114	19951204
			US 1994-350572	19941207

PRIORITY APPLN. INFO.:

AB The tool inserts manufd. from polycryst. diamond or **cubic** BN are precoated for brazing in air at nominally 700.degree., without conventional use of a vacuum furnace or an inert atm. The tool inserts are precoated with: (a) the bonding layer of preferably W-(1-50%) Ti alloy or Cr, followed by intermediate heating at nominally 600-800.degree. to form carbide or nitride interlayer film for bonding to the tool substrate; and (b) protective layer of nominally Ag, Cu, Au, Pd, Pt, Ni, or Ni-Cr alloy for oxidn. resistance in air. The precoated tool inserts are suitable for brazing to the tool supports at .apprx.700.degree. in air, using a std. braze without a vacuum furnace or special atm. The tool inserts from sintered polycryst. diamonds can be brazed to WC alloy holder in 0.5-5 min at .apprx.700.degree. in air, after precoating by sputtering with the interlayer films .ltoreq.1 .mu.m thick of W-Ti alloy, Ag, Ti (as **getter**), Ag, Cr, and Ni-Cr alloy, followed by diffusion heat treatment in Ar-5% H2 reducing atm. for 30-60 min at 700.degree..

IT 10043-11-5, **Boron nitride** (BN), uses
 (cubic, sintered inserts; tool inserts precoated with
 metal interlayers for brazing to holders in air)
 RN 10043-11-5 HCA
 CN Boron nitride (BN) (8CI, 9CI) (CA INDEX NAME)

B≡N

IT 7440-32-6, Titanium, processes
 (**getter**, in coating; sintered tool inserts precoated
 with metal interlayers for brazing to holders in air)
 RN 7440-32-6 HCA
 CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IC ICM C23C014-18
ICS C23C014-58; C23C028-02; C23C030-00
CC 56-9 (Nonferrous Metals and Alloys)
Section cross-reference(s): 57
ST diamond sintered insert brazing tool air; **boron nitride** insert brazing tool air; metal interlayer diamond insert brazing tool
IT 10043-11-5, **Boron nitride** (BN), uses
(**cubic**, sintered inserts; tool inserts precoated with metal interlayers for brazing to holders in air)
IT 7440-32-6, Titanium, processes
(**getter**, in coating; sintered tool inserts precoated with metal interlayers for brazing to holders in air)

L29 ANSWER 5 OF 5 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 95:191308 HCA
TITLE: Effect of oxygen on the growth of **cubic boron nitride** using magnesium nitride (Mg_3N_2) as catalyst
AUTHOR(S): Sato, Tadao; Hiraoka, Hideo; Endo, Tadashi; Fukunaga, Osamu; Iwata, Minoru
CORPORATE SOURCE: Natl. Inst. Res. Inorg. Mater., Sakura, 305, Japan
SOURCE: Journal of Materials Science (1981), 16(7), 1829-34
CODEN: JMTSAS; ISSN: 0022-2461
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Cubic B nitride (cBN)** was synthesized from hexagonal **B nitride (hBN)** under high pressure and high temp. using Mg_3N_2 as catalyst. The yield and morphol. of **cBN** were investigated in relation to the O impurity of the BN- Mg_3N_2 system. MgO pptd. as a by-product in this system and the amt. of the ppt. increased with an increase in the O content of the starting materials. The morphol. and surface patterns of **cBN** crystals synthesized using a hBN which contained O showed unusual features. The pptn. of MgO interfered with the free growth of **cBN** crystals. Purifn. of starting materials and addn. of Zr powder to the catalyst as an O **getter** increased the yield of **cBN** crystals showing smooth surfaces.

IT 7782-44-7, uses and miscellaneous
(**boron nitride** conversion with magnesium nitride catalyst in presence of)

RN 7782-44-7 HCA
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O=O

IT 12057-71-5
(catalyst, in conversion of hexagonal **boron nitride** to **cubic**, oxygen effect on)
RN 12057-71-5 HCA
CN Magnesium nitride (Mg₃N₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT 10043-11-5P, preparation
(formation of **cubic**, with magnesium nitride catalyst, oxygen effect on)
RN 10043-11-5 HCA
CN Boron nitride (BN) (8CI, 9CI) (CA INDEX NAME)

B≡N

CC 57-6 (Ceramics)
ST **boron nitride cubic** oxygen; magnesium nitride catalyst **boron nitride**
IT 7782-44-7, uses and miscellaneous
(**boron nitride** conversion with magnesium nitride catalyst in presence of)
IT 12057-71-5
(catalyst, in conversion of hexagonal **boron nitride** to **cubic**, oxygen effect on)
IT 10043-11-5P, preparation
(formation of **cubic**, with magnesium nitride catalyst, oxygen effect on)
IT 1309-48-4P, preparation
(formation of, in conversion of hexagonal **boron nitride** with magnesium nitride catalyst)
IT 7440-67-7, uses and miscellaneous
(**getter** for **oxygen**, with magnesium nitride, for conversion of hexagonal **boron nitride** to **cubic**)